Holt McDougal
Larson Geometry, Geometry

Degree of Evidence regarding the Standards for Mathematical Practice:

Minimal Evidence

Summary of evidence:

1. **Make sense of problems and persevere in solving them**. In the chapters reviewed, there are few open-ended problems. The open-ended questions are typically found in the practice problems and are delineated as such. Students are typically directed in how they should solve a particular problem, and then they are asked to replicate the process in the practice problems. In the chapters reviewed, there is little to no evidence of making connections among tables, graphs, equations, and situations. There are quite a few opportunities for students to explain or describe their solutions within the practice problems, but these opportunities are not directly presented as a chance for students to communicate with each other. It would be up to the teacher as to how it is implemented. There is very limited opportunity for students to create a problem-solving plan of their own and to follow through. Motivation for students to discover the concepts on their own is limited. It would be up to the teacher to effectively incorporate the "Investigating Geometry Activities" interspersed in the chapters.
2. **Reason abstractly and quantitatively**. In the chapters reviewed, there are some application problems ingrained in the units. Students are rarely, if ever, asked to create a model for an application aside from the Investigating Geometry Activities. There is not much connection between applications and representations using symbols. Often, symbols just appear in the formulas given to the students. Some of the error analysis problems tackle the concept of reasonableness. In addition, students are at times directed to detail what they expect the answer to be prior to completing the problem (e.g. p.844 #34b). Overall, most questions are solved by applying an algorithm which the students have not generalized or formed on their own through the help of a model.
3. **Construct viable arguments and critique the reasoning of others**. There are some opportunities for students to explain their reasoning. In the chapters reviewed, problems are mainly focused on arriving at a numerical answer, with a few problems in each section requiring an explanation or description. In the chapters reviewed, there was little mention of students sharing their methods with the class in the student or teacher resource. Explanations and discussion of justification are limited in the chapters reviewed. There are some problems included in the student practice that the teacher could use to foster student analysis and justification to others. There are limited opportunities for students to justify their thinking. Opportunities will rely on teacher facilitation of the activities and practice problems.
4. **Model with Mathematics**. In the chapters reviewed, students are rarely directed to create a model, unless they are completing one of the investigative labs that are separate from the section lesson. In the application questions, answers are in context. There is no explicit connection among tables, graphs, equations, and situations in the chapters reviewed. Students have some opportunity to work with tables and equations in the labs, but these activities could be skipped because they are separate from the section lessons. In the chapters reviewed, the applications are more in the form of a closed word problem with the exception of the occasional open-ended problems in the student practice problems. Students are presented with how the book details they should solve a problem, and then they are tasked with practicing the use of the prescribed algorithm.
5. **Use appropriate tools strategically.** Geometric constructions are interspersed at various times

throughout the text, but not presented as a tool to help students in making sense of the mathematical concepts. Students are asked to use rulers, protractors, patty paper, technology, and other materials to help them in the exploration of some concepts as presented in the investigative labs interspersed in the text, but not inherent in the section examples. It would be up to the teacher to include these labs in the course to help students grapple with the various tools. There is reference to the use of graphing calculators in separate technology sections. Students are also directed to use a calculator for trigonometry. The use of technology is typically treated separately from the practice problems. Students are directed to use technology in some of the labs. Technology use is primarily separated out from the practice problems in the student resource, and it would be up to the teacher to implement. In the chapters reviewed, there is little evidence of evaluating the strength and weaknesses of tools.

6. **Attend to precision.** Examples use proper notation and are precise. In the chapters reviewed, students are asked to conduct error analysis and to explain misconceptions through interspersed practice problems, but it is presented as a written communication rather than as a chance to talk about the mathematics with others. In the chapters reviewed, examples of precise communication are not present. Students could be given some opportunities to share and discuss their responses through teacher implementation of the investigative labs. There is attention to precision in the examples but no discussion for students to tackle. The fostering precise communication would rely on teacher facilitation of student activities presented in the teacher resource or in the labs.
7. **Look for and make use of structure**. In the chapters reviewed, there are few opportunities for students to look at examples and then generalize for themselves. Chapter 10 follows the pattern of giving students the formula, showing some examples using the formula, and then providing practice problems to complete on their own using the formula. It would depend on the teacher implementing the investigative labs, but in the section on volume, students generalize for rectangular prisms and then were given the formulas for the other solids. The rule is given and then worked-out examples follow. In the chapters reviewed, the student resource contains few activities for students to explore patterns to create generalizations, and these opportunities are separate from the section's lesson. There is limited to no connection to prior learning. Students are simply given the new rule to apply.
8. **Look for and express regularity in repeated reasoning.** In the chapters reviewed, students are rarely, if ever, asked to look at patterns and generalize on their own. Most of the time, the book shows them the pattern and then provides the formula. There are some Labs interspersed in the chapters that guide students to analyze and generalize their findings. Since the labs are not ingrained in the section examples themselves, they could be skipped. It would be up to the teacher to take the time to implement these activities, which are few. In the chapters reviewed, there are few to no opportunities for students to generalize a pattern to determine a rule. Opportunities to meet this standard would depend on the teacher taking the initiative to incorporate it into the course.